

What is claimed is:

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1. A method for communicating between computers interconnected by a communications network, the method comprising the steps of:

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- (a) receiving, at a deriving computer, a request from a client for transmission to the client of a user-selected version of a target file, the target file having particular informational content independent of its embodiment in a particular version;
 - (b) deriving by conversion the user-selected version from a materialized file from which the user-selected version is derivable if the user-selected version is not accessible to the deriving computer;
 - (c) transmitting, from the deriving computer to the client, the user-selected version.

2. The method set forth in claim 1, wherein the deriving computer is a server.

20 3. The method set forth in claim 1, wherein the deriving computer is a proxy interconnecting the client to a server.

4. The method set forth in claim 1, wherein the user-selected version is derived in step (b) from a parent file resident at the deriving computer.

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5. The method set forth in claim 1, further comprising the step of:

(d) transmitting from the deriving computer to a server, responsive to receiving the request in step (a), a request for transmission to the deriving computer of a materialized parent file from which the user-selected version may be derived by conversion, step (d) being performed before step (b).

6. The method set forth in claim 5, further comprising the step of:

(e) transmitting, from the deriving computer to the client, a program for generating a menu of user-selectable versions of the target file, step (e) being performed before step (a).

7. The method set forth in claim 6, further comprising the steps of:

(f) receiving, at the deriving computer, a file responsive to a request for transmission of the file originating from the client;

(g) deriving, at the deriving computer, a default, low resolution, version of the file, the default, low resolution version being transmitted to the client responsive to the client's request for transmission of the file, steps (f) and (g) being performed before step (e), the menu generation program transmitted in step (e) being transmitted along with the default, low resolution version.

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8. The method set forth in claim 7, further comprising the step of:

- 5 (h) generating a menu of user-selectable versions of the target file, the menu being generated by the menu generation program as determined by the versions materialized on the server and the versions derivable therefrom by the conversion software available to the deriving computer, step (h) being ~~performed before step (a).~~

10 9. A method for communicating between a client and a server interconnected to the client by a communications network, the method comprising the steps of:

- 15 (a) requesting, at the client, transfer of a target file having particular informational content;
- (b) displaying, at the client, in response to the request, a menu of user-selectable versions of the target file;
- (c) transmitting a request, from the client, indicating a user-selected version selected from the menu; and
- 20 (d) receiving, at the client, in response to the transmission of the selection, the user-selected version of the file.

10. The method set forth in claim 9 wherein the method further comprises the steps of:

- 25 (e) determining whether the user-selected version of the file is resident in a memory cache on a computer in

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the communications network, step (e) being performed intermediate steps (c) and (d); and
(f) transmitting the user-selected version of the file from the cache to the client if the user-selected version is resident in the cache.

11. The method set forth in claim 10 wherein the cache is maintained on the server.

12. The method set forth in claim 10 wherein the client and server are connected by a proxy for relaying a communication from a sender to a receiver and wherein the cache is maintained on the proxy.

13. The method set forth in claim 12 wherein the method further comprises the steps of:

- (g) requesting, at the client, transfer of a parent file to the client;
- (h) receiving, at the proxy, a materialized version of the parent file responsive to the client's request; and
- (i) deriving, at the proxy, a default, low resolution, version of the parent file, the low resolution version being transmitted to the client responsive to the request for transfer of the parent file, steps (g) (h) and (i) being performed before step (a).

14. The method set forth in claim 13 wherein the proxy transmits a program for generating the menu of user-selectable versions to the client along with the default, low resolution version transmitted to the client in step (i).

5 15. The method set forth in claim 14 wherein step (b) further comprises the step of:

generating at the client, a menu of user-selectable versions of the file.

16. The method set forth in claim 15 wherein the method further comprises the steps of:

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- (j) determining if the user-selected version of the file is resident in the cache;
 - (k) transmitting the user-selected version to the proxy if it is resident in the cache;
 - (l) determining whether the user-selected version of the file can be derived by conversion from any version of the file resident in the cache; and
 - (m) deriving the user-selected version of the file from a version resident in the cache if the user-selected version can be so derived.
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17. The method set forth in claim 16 wherein step (m) is performed at the proxy.

18. The method set forth in claim 16 wherein the method further comprises the step of:

- 5 (n) requesting transmission from the server of a materialized version of the file from which the user-selected version may be derived, if the user-selected version cannot be derived from a version resident in the cache.

19. The method set forth in claim 18 wherein the method further comprises the step of:

- (o) receiving the materialized version at the proxy.

20. The method set forth in claim 19 wherein the request for the file in step (a) comprises a universal resource locator for a file and information identifying a version of the file.

21. The method set forth in claim 20 wherein the program for generating the menu of user-selectable versions is written in the Javascript programming language.

22. The method set forth in claim 21 wherein the file is requested in step (a) by selecting a hyperlink.

23. The method set forth in claim 22 wherein the user-selected version is selected from the menu in step (c) by selecting a hyperlink.

24. The method set forth in claim 23 wherein the cache management technique employs an ignore heuristic to manage the

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identity of the files resident in the cache in which the cache does not store versions which are derivable from other versions resident in the cache.

25. The method set forth in claim 23 wherein the cache employs a save heuristic in which all derived versions are store in the cache, to manage the identity of the files resident in the cache.

26. The method set forth in claim 24 wherein the cache determines whether a version resident in the cache is a current version of the target file and requests a current version of the target file if the version resident in the cache is not a current version.

27. A method of communication of a user-selected version of a file to a client connected to a server by a communications network, a version of the target file being materialized on the server, the method comprising the steps of:

- (a) selecting, at the client, a single point of access to a target file having particular informational content to initiate transmission of a version of the file to the client;
- (b) generating, at the client, a menu of user-selectable versions of the target file, each user-selectable version being either materialized on the server or derivable from a materialized version;

- (c) selecting, at the client, a user-selected version of the target file from the menu; and
- (d) receiving, at the client, the user-selected version of the target file.

5 28. The method set forth in claim 27 wherein a proxy for relaying communications between the client and the server connects the client to the server and wherein the proxy transmits menu-generation information to the client.

10 29. The method set forth in claim 28 wherein the proxy transmits the menu-generation information to the client along with a file transmitted from the proxy to the client.

 30. The method set forth in claim 29 wherein the client generates the menu of user-selectable versions in step (b) from the menu-generation information.

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a3 31. The method set forth in claim 30 wherein the menu of user-selectable versions of the file comprises a selection for a materialized version of the target file and a selection for a version of the target file derivable from the materialized version by conversion.

20 32. The method set forth in claim 31 wherein the menu of user-selectable versions of the target file further comprises selections for a plurality of materialized versions of the target file.

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33. The method set forth in claim 32 wherein the proxy comprises a memory cache for storage of files and wherein the method further comprises the step of:

- 5 (e) transmitting the user-selected version of the target file from the proxy to the client if the user-selected version is in the cache, step (f) being performed intermediate steps (c) and (d).

34. The method set forth in claim 33 wherein the method further comprises the step of:

- 10 (f) deriving the user-selected version of the target file from a version of the target file resident in the cache if the user-selected version can be derived from a version resident in the cache by conversion, step (f) being performed intermediate steps (e) and (d).

35. The method set forth in claim 34 wherein the method further comprises the step of:

- 20 (g) requesting and receiving a materialized version of the file at the proxy if the user-selected version of the file is not resident in the cache and is not derivable from a version resident in the cache, step (g) being performed intermediate steps (f) and (d).

36. The method set forth in claim 35 wherein the method further comprises the step of:

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- (h) transmitting the materialized version of the target file to the client if the user-selected version is the materialized version, step (h) being performed intermediate steps (g) and (d).

5 37. The method set forth in claim 36 wherein the method further comprises the step of:

- (i) deriving the user-selected version of the file from the materialized version of the target file by conversion and transmitting the user-selected version of the target file to the client, if the user-selected version is derivable from the materialized version, step (i) being performed intermediate steps (h) and (d).

15 38. The method set forth in claim 37 wherein the single ~~point of access is a hyperlink displayed at the client.~~

20 39. A client computer for displaying a menu of user-selectable versions of a target file upon selection of a hyperlink to the target file, the client computer comprising:
a program for generating a menu; and
a program for transmitting a selection selected from the menu indicating a user-selected version of the target file, the selection being transmitted in the form of a request for transfer of the user-selected version of the target file.

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40. The client computer of claim 39 wherein the program for generating a menu at the client is generated from menu generation information stored at the client upon initiation of a request for transfer of a target file.

41. The client computer of claim 40 wherein the menu generation information is transmitted to the client computer from another computer interconnected to the client computer by a communications network.

42. A computer for satisfying a request for a user-selected version of a target file not materialized on the computer, the computer comprising:

a program requesting from another computer a materialized parent version of the target file from which the user-selected version can be derived if such a version is not stored on the computer; a computer program for deriving the user-selected version from the parent version by conversion; and a computer program for transmitting the user-selected version in response to the request.

43. The computer of claim 42 wherein the computer is a server.

44. The computer of claim 43 wherein the computer is a proxy.

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45. The computer of claim 44 wherein the proxy comprises a program for transmitting menu-generation information to a client along with a communication transmitted from the proxy to the client.

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47. The computer of claim 46 wherein the proxy further comprises:

a program for determining whether the user-selected version is derivable from a parent version resident in the cache; and

a program for deriving the user-selected version from a parent version resident in the cache.

15 48. A computer comprising:

a program for deriving by conversion a user-selected version of a target file, upon receipt of a request for transmission of the user-selected version;

a program for requesting from a server a parent version from which the user-selected version may be derived if such a version is not resident at the computer; and

a program for transmitting the user-selected version responsive to the request.

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49. The computer of claim 48, further comprising:
- a program for transmitting menu-generation program to the client, the menu generation program being capable of generating a menu of user-selectable version of the target file;
 - a program for transmitting a request for a materialized version; and
 - a program for transmitting the user-selected version.

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